

Application No. 10/087,541  
Amendment dated September 26, 2006  
Response to Office Action dated May 26, 2006

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**REMARKS**

**Introduction**

Claims 1-15, 17, and 19 are pending in the application. Claims 1-7 and 11 are withdrawn. Claims 16 and 18 are canceled by prior amendment. The final Office Action dated May 26, 2006 rejected claims 8-10, 12-15, and 17-19 under 35 U.S.C. §103 based on U.S. Patent No. 6,446,010 to Eriksson et al. (Eriksson et al.) or the publication in Journal of Molecular Biology (1999) by Wilkins et al. (Wilkins et al.), in view of the publication in Rapid Communications in Mass Spectrometry (1998) by Arnold et al. (Arnold et al.). The final Office Action rejected claims 8-10, 12-15, and 17-19 under 35 U.S.C. §112, first and/or second paragraphs, due to certain allegedly indefinite claim language or alleged new matter in claim 8. The final Office Action provisionally rejected claims 8-10 and 12-19 under the judicially created doctrine of obviousness-type double patenting over the claims of copending Application No. 10/241,751. Applicant has duly considered the final Office Action and amended the claims. The amendment is filed with a Request for Continued Examination to continue examination on the merits. Reconsideration and prompt allowance are respectfully solicited.

**Rejection of Claims 8-10, and 12-19 Under 35 U.S.C. §112, Second Paragraph**

The final Office Action, at page 2, item (2), rejected claims 8-10 and 12-19 under 35 U.S.C. §112, second paragraph, for allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The final Office Action alleged that language involving a step of "apportioning into a plurality of divisions" and

Application No. 10/087,541  
Amendment dated September 26, 2006  
Response to Office Action dated May 26, 2006

"evaluating" as set out in item (2), subsections (A) and (B), respectively, was indefinite. Applicant respectfully traverses the suggestion that the recited "apportioning into a plurality of divisions" and "evaluating" are indefinite, since persons of ordinary skill in the art would understand the nature of those actions and scope of the claim. However, to further progress of prosecution, applicant has amended claim 8 to recite that the "apportioning" is into a plurality of mass intervals, and to eliminate reference to "evaluating." Claims 16 and 18 are cancelled. The rejection of claims 8-10, 12-15, 17, and 19 under 35 U.S.C. §112, second paragraph, is overcome. The rejection is respectfully traversed. Reconsideration is respectfully requested.

**Rejection of Claims 30, 34, and 38 Under 35 U.S.C. §112, First Paragraph**

The Office Action at page 3, item (3), indicated a rejection of claims 30, 34, and 38 under 35 U.S.C. §112, first paragraph as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Applicant interprets item (3) as a rejection of claim 8, rather than the claims listed, since claims having those numbers are not pending. The citation in item (3) to language including "apportioning into a plurality of divisions" and "evaluating" as set out in item (3), subsections (A) and (B), respectively, further indicates a rejection of claim 8. Applicant respectfully traverses the suggestion that the steps of "apportioning into a plurality of divisions" and "evaluating" are not described in the specification, which elaborates on various aspects of apportioning and evaluating. See, e.g., among other sections, pg. 13, line 10- pg. 14, line 6, of applicant's specification. However, to likewise further

Application No. 10/087,541  
Amendment dated September 26, 2006  
Response to Office Action dated May 26, 2006

progress of prosecution, applicant has amended claim 8 to recite that the "apportioning" is into a plurality of mass intervals, and to eliminate reference to "evaluating." The rejection of claim 8 under 35 U.S.C. §112, first paragraph, is overcome. The rejection is respectfully traversed. Reconsideration is respectfully requested.

**Rejection of Claims 8-10, and 12-19 Under 35 U.S.C. §103 as Being Rendered Obvious by Wilkins et al. or Eriksson et al. in View of Arnold et al.**

The final Office Action, at page 4, item (4), indicated a rejection of claims 8-10 and 12-19 under 35 U.S.C. §102(b) as being anticipated by Wilkins et al. or Eriksson et al. in view of Arnold et al. Applicant interprets this rejection as being made under 35 U.S.C. §103, in light of the section heading at the bottom of page 3 referring to §103, and the citation to multiple references in the rejection.

The final Office Action at page 4, item (4), conceded that Wilkins et al. and Eriksson et al. fail to disclose or suggest "apportioning the spectral range into a plurality of divisions," and cited Arnold et al. to cure the deficiency of Wilkins et al. and Eriksson et al. Neither Wilkins et al., Eriksson et al., Arnold et al., nor their combination, even if combination were proper, discloses or suggests the method as claimed in claim 8. Claim 8 recites a method for peptide modification evaluation including "apportioning said spectral range for the at least one modified query peptide into a plurality of mass intervals," "distributing the mass ratios for the fragments of the at least one modified query peptide over one or more of the plurality of mass intervals," and "comparing the modified mass ratio for the one or more fragments with mass ratios for fragments associated with at

Application No. 10/087,541  
Amendment dated September 26, 2006  
Response to Office Action dated May 26, 2006

least one known peptide fragmentation spectrum adjusted to account for the modification in the mass interval.”

Moreover, claim 8 includes “scoring the mass ratio comparisons between the fragments of the at least one modified query peptide versus the at least one known peptide fragmentation spectrum within each mass interval,” and “summing the scored mass ratio comparison over the plurality of mass intervals to generate a summed score for the at least one known peptide fragmentation spectrum.” Claim 8 further includes “identifying at least one known peptide best matching the at least one modified query peptide when taking the mass of the modification into account, based on the summed score.” Neither Wilkins et al, Eriksson et al., Arnold et al., or their combination, even if combination were proper, disclose or suggest the method as claimed in claim 8, including “summing the scored mass ratio comparison over the plurality of mass intervals to generate a summed score for the at least one known peptide fragmentation spectrum.” Arnold et al., cited to supply a teaching of apportioning masses into spectral ranges, as well as Wilkins et al. and Eriksson et al., fail to describe a system in which comparison is made on a score generated for separate mass intervals, followed by a summation of scores over all intervals to identify “at least one known peptide best matching the at least one modified query peptide.” Arnold et al. describes fingerprint matching of bacterial strains, in which in one regard a “fingerprint” for a strain is generated by dividing the mass spectrum results of two samples into similar intervals, and running cross-correlation and auto-correlation calculations between those samples for those intervals, to arrive at a normalized baseline. That baseline can then be used for comparison against unidentified samples. See, e.g., Arnold et al, page 631, section entitled “Modified cross-correlation method.”

Application No. 10/087,541  
Amendment dated September 26, 2006  
Response to Office Action dated May 26, 2006

Arnold et al., as well as Wilkins et al. and Eriksson et al, does not describe a method as claimed, including, among other things, "summing the scored mass ratio comparison over the plurality of mass intervals to generate a summed score for the at least one known peptide fragmentation spectrum." That is, according to the method as claimed, not only are comparisons and scores in individual mass intervals generated, but an overall or summed score across all the mass intervals is also generated for candidate peptides. A known peptide fragmentation spectrum can, for example, reflect the best match or highest score within a given interval or intervals, but not represent the best match on a summed basis, as claimed.

Arnold et al. fails to supply a teaching of these and other features of the invention, as claimed. The system of Arnold et al. merely describes generating a comparison baseline using inter-to-interval correlations. Wilkins et al. likewise merely describes a known fingerprinting system that appears to analyze total mass, and then generate predicted modifications. In Wilkins et al., as applicant has previously noted, the described system relies in one regard on calculating mass differences between a query peptide and all theoretical peptides that may arise from a modification, but fails to describe division of a query peptide into mass intervals for comparison, scoring at the level of those intervals, and summation over those intervals, among other features. Eriksson et al. describes a system involving generating a frequency distribution of scores, then selecting from a top twenty segment of those scores, but not dividing a query peptide into mass intervals for comparison, scoring at the level of those intervals, and summation over those intervals, among other features. Claim 8 distinguishes over Wilkins et al., Eriksson et al., Arnold et al., and their combination, even if combination were proper, and the rejection of claim 8 is overcome. The

Application No. 10/087,541  
Amendment dated September 26, 2006  
Response to Office Action dated May 26, 2006

rejection is respectfully traversed. Reconsideration is respectfully requested.

Claims 16 and 18 are canceled. Claims 9, 10, 12-15, 17, and 19 distinguish over Wilkins et al. or Eriksson et al. in view of Arnold et al. for at least the same reasons as claim 8, from which they depend, does. The rejection of claims 9, 10, 12-15, 17, and 19 is respectfully traversed. Reconsideration is respectfully requested.

**Rejection of Claims 8-10 and 12-19 for Obviousness-Type Double Patenting**

The Office Action rejected claims 8-10 and 12-19 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of copending Application No. 10/241,751. Claims 16 and 18 are canceled. Applicant respectfully traverses the rejection of claims 9, 10, 12-15, 17, and 19 in view of the claims of copending Application No. 10/241,751, including for all the reasons stated in the amendment filed March 13, 2006. Applicant submits that the overall method claimed in claim 8, including features of "apportioning said spectral range for the at least one modified query peptide into a plurality of mass intervals" where the spectral range relates to a mass range "from zero to an unmodified mass associated with the modified query peptide," is patentably distinct from, and not obvious in light of, the claims of copending Application No. 10/241,751. The rejection is respectfully traversed. Applicant as before notes that should the Examiner maintain the rejection on provisional double patenting grounds, applicant will consider the filing of a Terminal Disclaimer as appropriate upon indication that the claims of the present application are otherwise allowable.

Application No. 10/087,541  
Amendment dated September 26, 2006  
Response to Office Action dated May 26, 2006

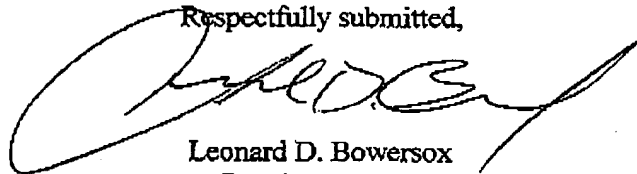
**CONCLUSION**

In view of the foregoing amendments and remarks, applicant respectfully requests favorable reconsideration of the present application and a timely allowance of the pending claims.

Should the Examiner deem that any further action by applicant or applicant's undersigned representative is desirable and/or necessary, the Examiner is invited to telephone the undersigned at the number set forth below.

If there are any other fees due in connection with the filing of this response, please charge the fees to deposit Account No. 50-0925. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,



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Enclosures